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September 24, 1997

VIA HAND DELIVERY

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: Routine Licensing of Large Numbers of Small Antenna Earth Stations Operating in the Ka-Band, RM-9005

Dear Mr. Caton:

On behalf of Lockheed Martin Corporation ("Lockheed Martin"), we hereby transmit an original and four copies of Lockheed Martin's comments in the above-referenced proceeding.

If you have any questions regarding this matter, please do not hesitate to contact the undersigned.

Respectfully submitted,

Carlos M. Nalda

Carlos M. Nalda
Counsel to Lockheed Martin Corporation

Enclosures

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BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of	)	
	)	
Routine Licensing of Large Numbers of Small Antenna Earth Stations Operating in the Ka-band	)	RM-9005

COMMENTS OF LOCKHEED MARTIN CORPORATION

Lockheed Martin Corporation ("Lockheed Martin") hereby submits its comments in response to the Commission's *Request for Comment* to refresh the record in the above-referenced proceeding.[1/] Specifically, the Commission sought comment on the (i) appropriateness of instituting blanket licensing procedures for earth stations operating in the frequency bands under consideration, and (ii) whether sharing can be achieved between the Fixed Satellite Service ("FSS") and the terrestrial Fixed Services ("FS") in the 17.7-19.7 GHz band.

For the reasons set forth herein, Lockheed Martin believes that blanket licensing for small antenna earth stations is not only appropriate, but is essential, to ensure the widespread availability of new and innovative Ka-band satellite communications services. Accordingly, Lockheed Martin urges the Commission to initiate the requested rulemaking as soon as possible, to consider the proceeding on an expedited basis, and to implement blanket licensing procedures

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1/ *See Commission Requests Comment to Refresh the Record on Proposals for Blanket Licensing of Satellite Earth Stations Operating in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands and Sharing Between Fixed Terrestrial and Satellite Services In the 17.7-19.7 GHz Frequency Bands*, IN Report No. 97-27 (rel. Sept. 5, 1997) ("*Request for Comment*").

for small antenna earth stations operating in the Ka-band on a sub-band by sub-band basis to facilitate the earliest possible development and deployment of these FSS earth stations.

With respect to FSS/FS sharing in the 17.7-19.7 GHz band, Lockheed Martin intends to deploy larger gateway earth stations in 500 megahertz of downlink spectrum in the 17.7-18.8 GHz sub-band as part of the Astrolink™ System. Lockheed Martin believes that Astrolink™ gateway earth stations will be able to share with terrestrial FS stations using standard coordination procedures. Therefore, Lockheed Martin requests that applications for authority to operate traditional gateway earth stations be processed in accordance with the Commission's standard coordination and licensing procedures, without regard to unrelated FS sharing issues associated with blanket licensing of small antenna earth stations.

I. BACKGROUND

On December 23, 1996, Lockheed Martin Corporation, along with four other petitioners, filed a *Petition for Rulemaking* requesting the Commission to revise Part 25 of its rules to provide for the routine licensing of large numbers of small antenna, geostationary satellite orbit ("GSO") FSS earth stations operating in the 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.5-30.0 GHz bands.[2/] The *Petition for Rulemaking* also proposed that the Commission initiate a separate proceeding to develop sharing criteria and licensing/registration procedures for earth stations operating in the 17.7-18.8 GHz band, which is shared on a co-primary basis between FSS and FS

2/ *See Routine Licensing of Large Number of Small Antenna Earth Stations Operating in the Ka-band*, Petition for Rulemaking of Lockheed Martin Corporation, AT&T Corp., Hughes Communications, Inc., Loral Space and Communications, Ltd., and GE American Communications, Inc. (collectively "Petitioners") (filed Dec. 23, 1996) ("*Petition for Rulemaking*").

systems.[3/] In comments filed in response to the *Petition for Rulemaking*, Teledesic Corporation supported Petitioners' proposals and requested that the Commission consider blanket licensing for all FSS earth stations throughout the 17.7-20.2 GHz and 27.5-30.0 GHz bands, including non-geostationary satellite orbit ("NGSO") FSS earth stations.[4/] In reply, Petitioners did not oppose consideration of the additional sub-bands suggested by Teledesic (*i.e.*, the 18.8-19.3 GHz, 28.6-29.1 GHz, and 17.7-18.8 GHz bands) in a consolidated rulemaking proceeding, so long as the proceeding is structured to permit the earliest possible adoption of blanket licensing procedures in each sub-band or service.[5/]

II. APPROPRIATENESS OF BLANKET LICENSING PROCEDURES FOR SMALL ANTENNA EARTH STATIONS OPERATING IN THE KA-BAND

Lockheed Martin believes that blanket licensing of small antenna earth stations is essential to facilitate the rapid and successful implementation of new and innovative Ka-band satellite communications services. As noted in the *Petition for Rulemaking,* Petitioners estimate that tens of millions of small antenna earth stations operating in the Ka-band will be deployed globally by 2007. Even at lower deployment numbers, individual licensing of small antenna earth stations will significantly hinder the implementation and increase the cost of Ka-band satellite communications services, and will severely burden government regulatory resources.

3/ *See id.*

4/ *See* Comments of Teledesic Corp., RM-9005 (filed Feb. 18, 1997).

5/ *See* Reply Comments of Lockheed Martin Corporation, AT&T Corp., Hughes Communications, Inc., Loral Space and Communications, Ltd., and GE American Communications, Inc., RM-9005 (filed Mar. 5, 1997).

The Commission has successfully implemented blanket licensing procedures for satellite earth stations in the context of very small aperture terminals ("VSATs") and in other contexts where substantial earth station deployment was anticipated.[6/] The Commission's past blanket licensing decisions constitute ample precedent to implement blanket licensing procedures for small antenna earth stations operating in the Ka-band and provide useful models for the instant proceeding.

The considerations which prompted Petitioners to file the *Petition for Rulemaking* nearly a year ago apply with even greater force today. Since the *Petition for Rulemaking* was filed with the Commission, the International Bureau has licensed thirteen GSO FSS systems and an NGSO FSS system to operate in the bands at issue.[7/] The licensing of FSS systems in the Ka-band is a crucial step to implementing these next-generation satellite systems and makes the need to develop blanket licensing procedures for small antenna earth stations operating in the Ka-band even more critical. Accordingly, Lockheed Martin urges the Commission to initiate the requested rulemaking as soon as possible and to consider the proceeding on an expedited basis.

6/ *See* 47 C.F.R. § 25.134 (1996) and *Routine Licensing of Large Networks of Small Antenna Earth Stations Operating in the 12/14 GHz Frequency Bands,* 6 FCC Rcd 7372 (1991); *see also Application of AMSC Subsidiary Corp. for Modification of Its Blanket License to Construct and Operate 200,000 L-Band Mobile Earth Stations*, 10 FCC Rcd 10924 (rel. Aug. 28, 1995), and *Application of Rockwell International Corp. for Modification of Its Blanket License to Construct and Operate 15,000 Mobile Earth Stations*, 10 FCC Rcd 10952 (rel. Sept. 7, 1995).

7/ *See* Authorizations of Comm, Inc. (DA 97-968); EchoStar Satellite Corporation (DA 97-969); GE American Communications, Inc. (DA 97-970); Hughes Communications Galaxy, Inc. (DA 97-971); KaStar Satellite Communications Corp. (DA 97-972); Lockheed Martin Corporation (DA 97-973); Loral Space and Communications Ltd. (DA 97-974); Morning Star Satellite Company, L.L.C. (DA 97-975); NetSat 28 Company, L.L.C. (DA 97-976); Orion Network Systems, Inc. (DA 97-977); Orion Atlantic, L.P. (DA 97-979); PanAmSat Licensee Corp. (DA 97-978); and VisionStar, Inc. (DA 97-980) (rel. May 9, 1997). *See* also Authorization of Teledesic Corporation (DA 97-527) (rel. Mar. 14, 1997).

In addition, as requested in the *Petition for Rulemaking*, Lockheed Martin urges the Commission to consider and resolve blanket licensing issues on a sub-band by sub-band basis, even if blanket licensing of all GSO FSS and NGSO FSS small antenna earth stations are considered in a consolidated rulemaking proceeding. Blanket licensing of small antenna earth stations operating in certain sub-bands (such as the 19.7-20.2 GHz and 29.5-30.0 GHz sub-bands, which are not complicated by issues associated with FSS/FS sharing) may be resolved more quickly and easily than other sub-bands. Blanket licensing procedures for these sub-bands should not be held hostage until the most difficult issues relating to other bands are resolved. Rather, the Commission should implement blanket licensing procedures for each relevant sub-band as they are developed. The consideration and implementation of blanket licensing procedures on a sub-band by sub-band basis will permit licensees to proceed with development and deployment of small antenna earth stations in the various sub-bands at the earliest possible time.

III. FSS/FS SHARING IN THE 17.7-19.7 GHz BAND

In Lockheed Martin's authorization and the authorizations of other GSO FSS Ka-band licensees, the Commission reaffirmed its conclusion that GSO FSS systems should be able to coordinate 500 megahertz of downlink spectrum in the 17.7-18.8 GHz band to give them, together with the 500 megahertz designated at 19.7-20.2 GHz, access to sufficient downlink spectrum to correspond with the 1000 megahertz of uplink spectrum designated for GSO FSS use.[8/] Lockheed Martin concurs with the Commission's conclusion, particularly with respect to

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8/ *See, e.g.*, Authorization of Lockheed Martin Corporation (DA 97-973) at ¶ 18.

the operation of Astrolink™ gateway earth stations in bands shared with FS stations on a co-primary basis. Thus, regardless of the Commission's consideration of sharing between ubiquitous, small antenna earth stations and FS stations in the context of the requested rulemaking proceeding, Lockheed Martin believes that applications for authority to operate gateway earth stations should be processed in accordance with the Commission's standard coordination and licensing procedures.

Lockheed Martin does not intend to operate ubiquitous, small antenna earth stations in bands shared with FS stations. Instead, Lockheed Martin intends to deploy a small number of larger Astrolink™ gateway earth stations in 500 megahertz of downlink spectrum in the 17.7-18.8 GHz band. Although co-frequency operation of terrestrial FS stations and ubiquitous, small antenna earth stations may raise complex regulatory considerations, Lockheed Martin believes that its gateway earth stations will be able to share spectrum with FS stations using standard coordination procedures. Accordingly, Lockheed Martin urges the Commission to authorize Astrolink™ gateway earth station operations, independent of its consideration of FSS/FS sharing issues relating to ubiquitous, small antenna earth stations.

Because Astrolink™ gateway earth stations will operate only in the downlink (receive) direction in shared FSS/FS spectrum, there is no possibility of interference from gateway earth stations into FS stations. In addition, Astrolink™ satellites comply fully with the Commission's power flux density limits designed to protect FS stations from interference caused by satellite downlink transmissions in the 17.7-19.7 GHz band.[9/] Accordingly, the relevant interference

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9/ *See* 47 C.F.R. § 25.208(c) (1996); *see also* Application of Lockheed Martin Corporation for Authority to Construct, Launch and Operate a Global Ka-Band Communications (continued...)

scenario with respect to Astrolink™ gateway operations in shared FSS/FS spectrum is interference from FS stations into the gateway earth stations.

Astrolink™ gateway earth stations will have relatively large antenna diameters and thus will have more robust communication links with Astrolink™ satellites, thereby reducing sensitivity to interference from FS stations operating in shared frequency bands. In addition, Astrolink™ gateway earth stations will be relatively few in number, with typically no more than one gateway earth station per Astrolink™ satellite beam. In many cases, gateway earth stations can be placed outside of metropolitan locations, away from areas of significant FS deployment. Where metropolitan installation is required, careful siting of Astrolink™ gateway earth stations to take advantage of natural blockage (*e.g.*, intervening buildings, rooftop structures, etc.) and the use of RF shields can be used to minimize interference from terrestrial FS stations. Thus, the unique characteristics of Astrolink™ gateway earth stations should permit gateway operations in 500 megahertz of downlink spectrum shared with FS stations, regardless of the conclusions the Commission may reach concerning sharing between ubiquitous, small antenna earth stations and FS stations.

Lockheed Martin's authorization specifically instructs Lockheed Martin to identify exactly which 500 megahertz of downlink spectrum in the 17.7-18.8 GHz band it wishes to use and to file a modification application to operate in these frequencies.[10/] Lockheed Martin is currently in the process of identifying the appropriate 500 megahertz of downlink spectrum for

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9/ (...continued)
Satellite System in Geostationary Orbit, File Nos. 182 - 186-SAT-P/LA-95 (Sept. 27, 1995) at 90-92.

10/ Authorization of Lockheed Martin Corporation (DA 97-973) at ¶ 20.

the Astrolink™ gateway earth stations and will include a request for authority to operate in the identified frequencies in a comprehensive modification application.[11/]

In this connection, early identification of and certainty with respect to the downlink frequencies selected for gateway earth station operations are critical to the development and implementation of the Astrolink™ System. As the Commission recognized with inter-satellite link frequencies, uncertainty regarding essential downlink spectrum would preclude the construction and indefinitely delay the deployment of Astrolink™ satellites.[12/] Indeed, if the Commission pursues a protracted rulemaking proceeding to consider FSS/FS sharing issues in the 17.7-19.7 GHz band and declines to authorize necessary downlink spectrum during the pendency of the proceeding, it necessarily prohibits the construction of GSO FSS Ka-band satellites and, as a result, creates a risk that licensees may be unable bring their networks into use prior to the expiration of the bringing into use date of U.S. Ka-band filings at the ITU. Accordingly, Lockheed Martin urges the Commission to refrain from pursuing any regulatory approach to FSS/FS sharing issues that would act as a freeze on the construction of GSO FSS satellites, would risk the loss of international protection for GSO FSS Ka-band satellite systems, and would deprive Ka-band licensees of the benefits of their recently issued authorizations.

However, regardless of the Commission's consideration of FSS/FS sharing issues associated with blanket licensing of small antenna earth stations, the deployment of larger gateway earth stations by Lockheed Martin or other operators should not be subject to regulatory

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11/ Lockheed Martin intends to file a comprehensive modification application to conform the Astrolink™ application to the forthcoming Ka-band service rules.

12/ *See, e.g.,* Authorization of Lockheed Martin Corporation (DA 97-973) at ¶ 27.

delay. As described above, unlike ubiquitous, small antenna earth stations, larger Astrolink™ gateway earth stations should be able to share with FS stations using standard coordination procedures. Accordingly, Lockheed Martin should be licensed to operate its gateway earth stations in 500 megahertz of downlink spectrum in the 17.7-18.8 GHz band in the context of its modification application, independent of the Commission's consideration of FSS/FS sharing issues relating to small antenna earth stations.

IV. CONCLUSION

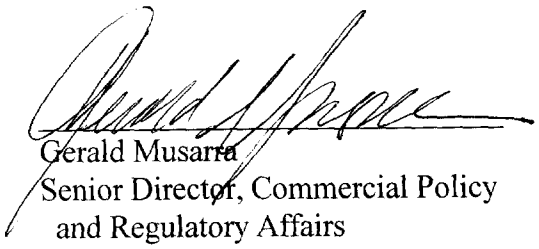
Lockheed Martin believes that blanket licensing for small antenna earth stations is not only appropriate, but is essential, to facilitate the rapid and successful implementation of new and innovative Ka-band satellite communications services. Lockheed Martin urges the Commission to initiate the requested rulemaking as soon as possible, to consider the proceeding on an expedited basis, and to implement blanket licensing procedures for small antenna earth stations operating in the Ka-band on a sub-band by sub-band basis to facilitate the earliest possible development and deployment of these earth stations.

With respect to its consideration of FSS/FS sharing issues in the context of blanket licensing of small antenna earth stations operating in the Ka-band, Lockheed Martin urges the Commission to refrain from pursuing any regulatory actions that would indefinitely delay the construction of GSO FSS Ka-band satellites and would deprive licensees of the benefits of their recently issued authorizations. In addition, because larger Astrolink™ gateway earth stations should be able to share with FS stations using standard coordination procedures, Lockheed Martin requests that it be licensed to operate gateway earth stations in 500 megahertz of downlink spectrum in the 17.7-18.8 GHz sub-band in the context of its forthcoming Astrolink™

modification application, without regard to unrelated FSS/FS sharing issues associated with blanket licensing of small antenna earth stations.

Respectfully submitted,

LOCKHEED MARTIN CORPORATION

By: 

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September 24, 1997

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Comments of Lockheed Martin Corporation were served by hand delivery the 24th day of September, 1997 to:

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